

7.9 Square Root Functions and Inequalities

Square root function--a function that contains a square root of a variable

What is the inverse of $f(x) = x^2$?

$$\begin{aligned} y &= x^2 \\ \sqrt{y} &= \sqrt{x^2} \\ \pm\sqrt{x} &= y \end{aligned}$$

To be a function
restricted to positive
 $y = \sqrt{x}$

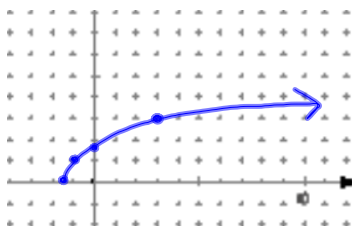
Graph in the real number system.

$$y = \sqrt{2x + 3}$$

$$\begin{aligned} 2x + 3 &\geq 0 \\ x &\geq -\frac{3}{2} \end{aligned}$$

x	y
-3/2	0
0	√3
3	3
-1	1

D:
R:



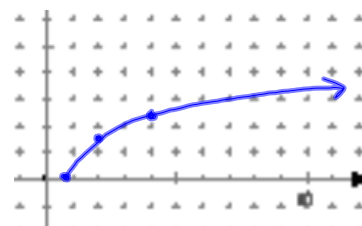
$$\begin{aligned} D: x &\geq -\frac{3}{2} \\ R: y &\geq 0 \end{aligned}$$

$$y = \sqrt{\frac{3}{2}x - 1}$$

$$\begin{aligned} \frac{3}{2}x - 1 &\geq 0 \\ x &\geq \frac{2}{3} \end{aligned}$$

x	y
2/3	0
2	1
4	√5

D:
R:

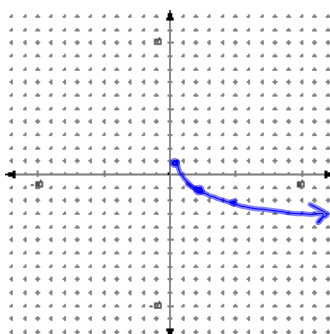


$$y = -\sqrt{2x} + 1$$

$$\begin{aligned} 2x &\geq 0 \\ x &\geq 0 \end{aligned}$$

x	y
0	1
2	-1
4.5	-2

D: $x \geq 0$
R: $y \leq 1$

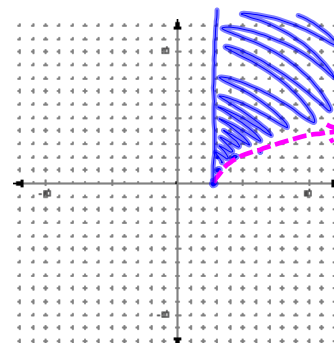


Inequalities

$$y > \sqrt{3x - 8}$$

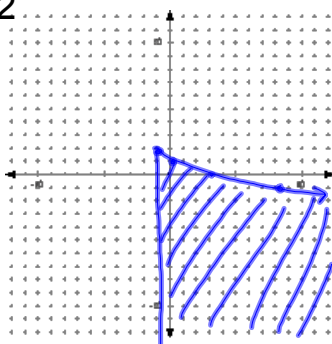
$$\begin{aligned} x &\geq \frac{8}{3} \end{aligned}$$

x	y
8/3	0
3	1
4	2
6	√10



$$y \leq -\sqrt{x+1} + 2$$

x	y
-1	2
0	1
3	0
8	-1



HW
p398
15-31 odd